

WHAT IS CLAIMED IS:

1. A source follower comprising:
a transistor;
5 a capacitor comprising a first electrode and a second electrode;
a constant current supply connected to a source of the transistor; and
a plurality of switching elements which can select any one of first to third
modes,
wherein in the first mode, a first potential is supplied to a gate of the
10 transistor and an input potential is supplied to the first electrode, respectively, and
the second electrode and the source of the transistor are connected;
wherein in the second mode, an input potential is supplied to the first
electrode, and the gate of the transistor and a potential of the second electrode
floats, and
15 wherein in the third mode, the first electrode and the gate of the transistor
are connected, and a potential thereof floats and a second potential is supplied to
the second electrode.
2. The source follower according to claim 1, wherein the plurality of
20 switching elements are provided five or more.
3. A semiconductor device comprising the source follower according to
claim 1,
wherein the semiconductor device comprises a pixel provided with a
25 display element,
wherein a potential of a video signal is supplied to the source follower as
the input potential, and
wherein the output potential of the source follower is supplied to the pixel
via a signal line.

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4. A semiconductor device comprising the source follower according to claim 1, and a first analog latch and a second analog latch in a signal line driver circuit,

wherein the semiconductor device comprises a pixel provided with a
5 display element,

wherein a potential of a video signal inputted to the first analog latch sequentially is supplied to the source follower as the input potential after supplied to the second latch, and

wherein the output potential of the source follower is supplied to the pixel
10 via a signal line.

5. A semiconductor device comprising the source follower according to claim 1, and an analog latch in a signal line driver circuit,

wherein the semiconductor device comprises a pixel provided with a
15 display element,

wherein a potential of a video signal inputted to the analog latch sequentially is supplied to the source follower as the input potential, and

wherein the output potential of the source follower is supplied to the pixel via a signal line.

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6. A source follower according to claim 1, wherein the source follower is incorporated in at least one selected from the group consisting of a display device, a digital camera, a laptop computer, a mobile computer, an image reproduction device, a goggle type display, a video camera, and a cellular phone.

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7. A source follower comprising:

a transistor;

a capacitor comprising a first electrode and a second electrode;

a first switching element for controlling a supply of an input potential to
30 the first electrode;

a second switching element for controlling a supply of a first potential to a gate of the transistor;

a third switching element for controlling a connection between the gate of the transistor and the first electrode;

5 a fourth switching element for controlling a supply of a second potential to the second electrode;

a fifth switching element for controlling a connection between the second electrode and a source of the transistor; and

a constant current supply connected to the source of the transistor,

10 wherein the second and third switching elements control a supply of the first potential to the first electrode.

8. A semiconductor device comprising the source follower according to claim 7,

15 wherein the semiconductor device comprises a pixel provided with a display element,

wherein a potential of a video signal is supplied to the source follower as the input potential, and

20 wherein the output potential of the source follower is supplied to the pixel via a signal line.

9. A semiconductor device comprising the source follower according to claim 7, and a first analog latch and a second analog latch in a signal line driver circuit,

25 wherein the semiconductor device comprises a pixel provided with a display element,

wherein a potential of a video signal inputted to the first analog latch sequentially is supplied to the source follower as the input potential after supplied to the second latch, and

30 wherein the output potential of the source follower is supplied to the pixel

via a signal line.

10. A semiconductor device comprising the source follower according to claim 7, and an analog latch in a signal line driver circuit,

5 wherein the semiconductor device comprises a pixel provided with a display element,

 wherein a potential of a video signal inputted to the analog latch sequentially is supplied to the source follower as the input potential, and

 wherein the output potential of the source follower is supplied to the pixel
10 via a signal line.

11. A source follower according to claim 7, wherein the source follower is incorporated in at least one selected from the group consisting of a display device, a digital camera, a laptop computer, a mobile computer, an image reproduction
15 device, a goggle type display, a video camera, and a cellular phone.

12. A voltage follower comprising:

an operational amplifier;

a capacitor comprising a first electrode and a second electrode; and

20 a plurality of switching elements which can select any one of first to third modes,

 wherein in the first mode, a first potential is supplied to a non-inverted input terminal of the operational amplifier and an input potential is supplied to the first electrode respectively and the second electrode and an output terminal of the
25 operational amplifier are connected,

 wherein in the second mode, an input potential is supplied to the first electrode and the non-inverted input terminal and the second electrode floats, and

 wherein in the third mode, the first electrode and the non-inverted input terminal are connected and a potential thereof floats and a second potential is
30 supplied to the second electrode.

13. The voltage follower according to claim 12, wherein the plurality of switching elements are provided five or more.

5 14. A semiconductor device comprising the voltage follower according to claim 12,

 wherein the semiconductor device comprises a pixel provided with a display element,

 wherein a potential of a video signal is supplied to the voltage follower as
10 the input potential, and

 wherein the output potential of the voltage follower is supplied to the pixel via a signal line.

 15. A semiconductor device comprising the voltage follower according to
15 claim 12, and a first analog latch and a second analog latch in a signal line driver circuit,

 wherein the semiconductor device comprises a pixel provided with a display element,

 wherein a potential of a video signal inputted to the first analog latch
20 sequentially is supplied to the voltage follower as the input potential after supplied to the second analog latch, and

 wherein the output potential of the voltage follower is supplied to the pixel via a signal line.

25 16. A semiconductor device comprising the voltage follower according to claim 12, and an analog latch in a signal line driver circuit,

 wherein the semiconductor device comprises a pixel provided with a display element,

 wherein a potential of a video signal inputted to the analog latch
30 sequentially is supplied to the voltage follower as the input potential, and

wherein the output potential of the voltage follower is supplied to the pixel via a signal line.

17. A voltage follower according to claim 12, wherein the source follower
5 is incorporated in at least one selected from the group consisting of a display device, a digital camera, a laptop computer, a mobile computer, an image reproduction device, a goggle type display, a video camera, and a cellular phone.

18. A voltage follower comprising:
10 an operational amplifier;
a capacitor comprising a first electrode and a second electrode;
a first switching element for controlling a supply of an input potential to the first electrode;
a second switching element for controlling a supply of a first potential to a
15 non-inverted input terminal of the operational amplifier;
a third switching element for controlling a connection between the non-inverted input terminal and the first electrode;
a fourth switching element for controlling a supply of a second potential to the second electrode; and
20 a fifth switching element for controlling a connection between the second electrode and an output terminal of the operational amplifier,
wherein the second and third switching elements control a supply of the first potential to the first electrode; and
an inverted input terminal of the operational amplifier is connected to the
25 output terminal thereof.

19. A semiconductor device comprising the voltage follower according to claim 18,
wherein the semiconductor device comprises a pixel provided with a
30 display element,

wherein a potential of a video signal is supplied to the voltage follower as the input potential, and

wherein the output potential of the voltage follower is supplied to the pixel via a signal line.

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20. A semiconductor device comprising the voltage follower according to claim 18, and a first analog latch and a second analog latch in a signal line driver circuit,

wherein the semiconductor device comprises a pixel provided with a
10 display element,

wherein a potential of a video signal inputted to the first analog latch sequentially is supplied to the voltage follower as the input potential after supplied to the second analog latch, and

wherein the output potential of the voltage follower is supplied to the
15 pixel via a signal line.

21. A semiconductor device comprising the voltage follower according to claim 18, and an analog latch in a signal line driver circuit,

wherein the semiconductor device comprises a pixel provided with a
20 display element,

wherein a potential of a video signal inputted to the analog latch sequentially is supplied to the voltage follower as the input potential, and

wherein the output potential of the voltage follower is supplied to the pixel via a signal line.

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22. A voltage follower according to claim 18, wherein the source follower is incorporated in at least one selected from the group consisting of a display device, a digital camera, a laptop computer, a mobile computer, an image reproduction device, a goggle type display, a video camera, and a cellular phone.

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23. A semiconductor device comprising:
a transistor;
a capacitor comprising a first electrode and a second electrode;
a constant current supply connected to a source of the transistor; and
5 a plurality of switching elements which can select any one of first to third modes,

wherein in the first mode, a first potential is supplied to a gate of the transistor and an input potential is supplied to the first electrode respectively and the second electrode and a source of the transistor are connected,

10 wherein in the second mode, an input potential is supplied to the first electrode and the gate of the transistor and a potential of the second electrode floats, and

wherein in the third mode, the first electrode and the transistor are connected and a potential thereof floats and a second potential is supplied to the
15 second electrode.

24. The semiconductor device according to claim 23, wherein the plurality of switching elements are provided five or more.

20 25. A semiconductor device according to claim 23, wherein the semiconductor device is at least one selected from the group consisting of a display device, a digital camera, a laptop computer, a mobile computer, an image reproduction device, a goggle type display, a video camera, and a cellular phone.

25 26. A semiconductor device comprising:
a transistor;
a capacitor comprising a first electrode and a second electrode;
a first switching element for controlling a supply of an input potential to the first electrode;
30 a second switching element for controlling a supply of a first potential to a

gate of the transistor;

 a third switching element for controlling a connection between the gate of the transistor and the first electrode;

 a fourth switching element for controlling a supply of a second potential

5 to the second electrode;

 a fifth switching element for controlling a connection between the second electrode and a source of the transistor; and

 a constant current supply connected to the source of the transistor,

 wherein the second and third switching elements control a supply of the

10 first potential to the first electrode.

27. A semiconductor device according to claim 26, wherein the semiconductor device is at least one selected from the group consisting of a display device, a digital camera, a laptop computer, a mobile computer, an image

15 reproduction device, a goggle type display, a video camera, and a cellular phone.